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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/729,723	12/05/2003	Soo Hyun Kim	9665-2	2626
30448	7590 01/20/200	6	EXAMINER	
AKERMA	N SENTERFITT	TURNER, SAMUEL A		
P.O. BOX 3188 WEST PALM BEACH, FL 33402-3188			ART UNIT	PAPER NUMBER
WESTIA	EN BEACH, TE 33 (6)	2 3 100	2877	
		DATE MAILED: 01/20/2006		

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)			
	10/729,723	KIM ET AL.			
Office Action Summary	Examiner	Art Unit			
	Samuel A. Turner	2877			
The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply					
A SHORTENED STATUTORY PERIOD FOR REPLY WHICHEVER IS LONGER, FROM THE MAILING DATE of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication. If NO period for reply is specified above, the maximum statutory period was realized to reply within the set or extended period for reply will, by statute, Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATION 36(a). In no event, however, may a reply be tim viil apply and will expire SIX (6) MONTHS from cause the application to become ABANDONE	V. nely filed the mailing date of this o D (35 U.S.C. § 133).			
Status					
1) Responsive to communication(s) filed on 22 M	arch 2004.				
2a) This action is FINAL . 2b) ⊠ This	action is non-final.				
3) Since this application is in condition for allowar	ation is in condition for allowance except for formal matters, prosecution as to the merits is				
closed in accordance with the practice under E	x parte Quayle, 1935 C.D. 11, 45	53 O.G. 213.			
Disposition of Claims					
4) ☐ Claim(s) 1-7 is/are pending in the application. 4a) Of the above claim(s) is/are withdray 5) ☐ Claim(s) is/are allowed. 6) ☐ Claim(s) 1-7 is/are rejected. 7) ☐ Claim(s) is/are objected to. 8) ☐ Claim(s) are subject to restriction and/o					
Application Papers					
9) The specification is objected to by the Examine 10) The drawing(s) filed on is/are: a) accomplicated may not request that any objection to the Replacement drawing sheet(s) including the correct 11) The oath or declaration is objected to by the Examine	epted or b) objected to by the l drawing(s) be held in abeyance. Sec ion is required if the drawing(s) is ob	e 37 CFR 1.85(a). jected to. See 37 C			
Priority under 35 U.S.C. § 119					
 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) All b) Some * c) None of: 1. Certified copies of the priority documents have been received. 2. Certified copies of the priority documents have been received in Application No 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received. 					
Attachment(s) 1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 3/22/04.	4) Interview Summary Paper No(s)/Mail D 5) Notice of Informal F 6) Other:	ate	⁻ O-152)		

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DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is confusing in that the second beam-splitter divides the white light, which is a polychromatic light, into split monochromatic light beams. There is no antecedent basis for "the split monochromatic light beams". The configuration of the Michelson interferometer is indefinite. Applicant claims the Michelson interferometer as "located between the second beam splitter and reference mirror plane". However, the Michelson interferometer (30) includes both the second beam-splitter (32) and the reference mirror (33). How can the interferometer be between components which form the interferometer? The reference characters. Beam splitter 32, found recited in the detailed description and the drawings may be used in conjunction with the recitation of the same element or group of elements in the claims. However the reference characters must be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the

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claims. The use of reference characters is to be considered as having no effect on the scope of the claims, see 608.01(m).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-7 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kim et al(5/2002, Measurement Science and Technology).

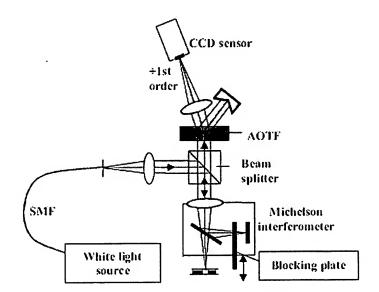


Figure 1. Schematic diagram of the proposed AOTF-based thickness profilometer.

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With regard to claim 1 Kim et al teach a system for measuring the threedimensional shape of a transparent thin film using an acousto-optic tunable filter, comprising:

a light source for emitting white light(White light source);
a second beam splitter for reflecting and transmitting the white light emitted from
the light source to split the white light and irradiate the split monochromatic light
beams toward a reference mirror plane and a measurement object(the beamsplitter in the Michelson interferometer);

a Michelson interferometer module (Michelson interferometer) located between the second beam splitter and reference mirror plane (the reference mirror in the Michelson interferometer), to correspond to a reflection angle of the second beam splitter, the Michelson interferometer module including a blocking plate (Blocking plate) for selectively blocking the white light beam irradiated on the reference mirror plane;

an acousto-optic tunable filter (AOTF) located in the traveling direction of white light selectively reflected from the reference mirror plane according to whether the white light is blocked or not and white light reflected from the measurement object, and adapted to select a monochromatic light beam of a specific wavelength band from the white light irradiated on the surface thereof;

a first beam splitter of non-polarized cubic type located to correspond to the projection direction of white light emitted from the light source and the projection

direction of white light emitted from the second beam splitter 32, and adapted to allow reflection and transmission of white light to be sequentially carried out among the light source, the second beam splitter and the acousto-optic tunable filter(Beam splitter); and

a CCD sensor on which the monochromatic light beam selected by the acousto-optic tunable filter is irradiated to form a spectral image(CCD sensor), see figure 1.

As to claim 2, wherein the measurement object is composed of a metal layer with a patterned surface formed on a wafer and a thin film with a patterned surface formed on the metal layer (page L4).

As to claim 3, further comprising a single-mode optical fiber(SMF) one end of which is connected to the light source in the projection direction of white light emitted from the light source and the other end of which is fixed to correspond to a reflection angle of the first beam splitter.

As to claim 4, further comprising a first convex lens(the collimating lens) located between the single-mode optical fiber and the first beam splitter so that light width according to the traveling direction of white light projected from the single-mode optical fiber is aligned before the white light is irradiated to the first beam splitter.

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As to claim 5, wherein the Michelson interferometer module further includes a second convex lens(the focusing lens) placed between the first and second beam splitters so as to focus the white light on the second beam splitter.

As to claim 6, further comprising a third convex lens(the imaging lens) located between the CCD sensor and the acousto-optic tunable filter so as to focus the selected monochromatic light on the CCD sensor.

As to claim 7, wherein the reference mirror plane is a plane reflection mirror located to correspond to the irradiating direction of the white light(the plane reference mirror in the Michelson interferometer).

The Kim et al reference is clearly applicant's invention having a publication date 31 May 2002 which is more than 1 year prior to applicant's filing date and is therefor a statutory bar under 35 U.S.C. 102(b).

Relevant Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kim et al(11/2002, Optics Letters) discloses the use of an AOTF, see figure 1. Davidson(5,112,129) is cited as a white light interferometer incorporating a shutter 33 in the reference arm, see figure 1.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A. Turner whose phone number is 571-272-2432.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached on 571-272-2800 ext. 77.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Samuel A. Turner Primary Examiner

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